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OTSUKA HIROFUMI****(54) OPTICAL TYPE TORQUE DETECTOR****(57) Abstract:**

**PURPOSE:** To omit a stroboscope and to make it possible to perform digital measurement, by generating Moire fringes on the half part of a grating body in correspondence with the change in relative rotation displacement between two rotary bodies.

**CONSTITUTION:** Gratings 5 of a first optical grating body 4<sub>1</sub> are linearly continued in the longitudinal direction. Gratings 6 of a second optical grating body 4<sub>2</sub> are divided in one half part 6a and another half part 6b in the longitudinal direction. The phases of both half parts 6a and 6b are made different by e.g., 1/4 the pitch P of the gratings. When relative rotation is yielded between both rotary bodies 3<sub>1</sub> and 3<sub>2</sub> by the torsion of a transmission shaft member 1, Moire fringes, which are continued in a ring shape, are yielded in the rotating direction of the shaft member 1 by the gratings 5 of the grating body 4<sub>1</sub> and both half parts 6a and 6b of the gratings 6 of the grating body 4<sub>2</sub>. A light beam is inputted from a light source 8 through a light projecting optical fiber 9. The reflected light beams from the outer surface of the shaft member 1 are guided to a pair of light detectors 11<sub>1</sub> and 11<sub>2</sub> through light receiving optical fiber 10<sub>1</sub> and 10<sub>2</sub>. Based on the output signals of the light detectors 11<sub>1</sub> and 11<sub>2</sub>, the generated

times of the Moire fringes are digitally counted by a detecting circuit. Thus the torsional torque of the shaft member 1 is detected.

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